Offshore Ekman Transport and Ekman Pumping off Peru During the 1997-1998 El Nino

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Satellite ocean vector wind measurements are used to describe onshore-offshore Ekman transport and Ekman pumping/suction (i.e., downward/upward velocity) in the coastal ocean at 15°S off Peru, where upwelling is the dominant physical process. Normal and El Niño conditions are defined for May 1992 - April 1997 and May 1997 - May 1998, respectively. During normal conditions, both Ekman suction and offshore Ekman transport produced upwelling. During the El Niño, the May-August speed of Ekman pumping was nearly 4 times larger than the normal speed of Ekman suction and offshore Ekman transport nearly doubled. The strong Ekman pumping may be the source for the deepened coastal thermocline during El Niño, although the evidence is not conclusive because of the absence of in situ observations.